

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 38-48 and 50-76 are pending in this application, Claim 49 having been canceled without prejudice or disclaimer; and Claims 38-44, 50, 51, 54-63, 66, 67, 69, and 74 having been presently amended; and Claims 75 and 76 having been added. Support for amended Claims 38-44, 50, 51, 54-63, 66, 67, 69, and 74 can be found, for example, in the original claims, drawings, and specification as originally filed.¹ No new matter has been added.

In the outstanding Office Action, the specification was objected to due to informalities; Claims 38-74 were rejected under 35 U.S.C. §112, second paragraph; Claims 38-74 were rejected under 35 U.S.C. §101; and Claims 38-74 were rejected under 35 U.S.C. §103(a) as unpatentable over Cuatto (“A Case Study in Embedded Systems Design: An Engine Control Unit”) in view of Coleman (“Introducing Object Charts or How to Use State Charts and Object-Oriented Design”).

In response to the objection to the specification, Applicants have amended the specification to include the appropriate headings. Accordingly, Applicants respectfully submit that the objection to the specification has been overcome.

In response to the rejection of Claims 38-74 under 35 U.S.C. §112, second paragraph, Applicants have amended the claims to correct the informalities noted in the outstanding Office Action. Accordingly, Applicants respectfully request that the rejection under 35 U.S.C. §112, second paragraph, be withdrawn.

In response to the rejection of Claims 38-74 under 35 U.S.C. § 101, page 4 of the outstanding Office Action states that “the claimed subject matter does not produce a tangible

¹ See page 2, lines 20-26; page 7, lines 21-33; and page 17, lines 1-9 of the specification.

result because the claimed subject matter fails to produce a result that is limited to having real world value rather than a result that may be interpreted to be abstract in nature....”

Applicants first note that in light of the recent Federal Circuit case of *In re Bilski*, the “useful, concrete, and tangible result” test referred to in the outstanding Office Action is no longer the proper test for determining whether a method is statutory under 35 U.S.C. § 101. Under the recent decision by the Federal Circuit in *In re Bilski*, a method claim is statutory under 35 U.S.C. §101 if it is ***tied to a particular machine or apparatus***, or transforms an article into a different state or thing.

Claim 38 has been amended to clarify that the method is implemented by an electrical architecture designing device. In other words, the claimed electrical architecture designing device is a ***special-purpose machine*** that has been programmed in a particular manner. Thus, the method recited in Claim 38 is tied to a ***particular apparatus***. In this regard, Applicants note that the CCPA, in *In re Bernhart*, stated the following:

To this question we say that if a machine is programmed in a certain new and unobvious way, it is physically different from the machine without that program; its memory elements are differently arranged. The fact that these physical changes are invisible to the eye should not tempt us to conclude that the machine has been changed. If a new machine has not been invented, certainly a “new and useful improvement” of the unprogrammed machine has been, and Congress has said in 35 U.S.C. §101 that such improvements are statutory subject matter for a patent.... It may well be that the vast majority of newly programmed machines are obvious to those skill in the art and hence unpatentable under 35 U.S.C. §103. We are concluding here that such machines are statutory under 35 U.S.C. §101.²

Thus, for the reasons stated above, Applicant respectfully requests the rejection of Claims 38-43 under 35 U.S.C. § 101 be withdrawn.

² 417 F.2d 1395 (CCPA 1969). Emphasis added.

In regard to independent Claim 44, page 5 of the outstanding Office Action states that the system claim is nonstatutory as the claim recites only method steps and claims no hardware components. Applicants respectfully traverse the rejection.

Applicants note that Claim 44 is directed to a device for design of a hardware and software system and recites means-plus-function terminology. Proper claim interpretation of a means-plus-function (35 U.S.C. § 112, 6th paragraph) element entails consideration of the structures disclosed in the specification and equivalents thereof. In determining the scope of the claims prior to determining compliance with each statutory requirement for patentability, MPEP § 2106 provides:

Office personnel are to correlate each claim limitation to all portions of the disclosure that describes the claim limitation. This is to be done in all cases, i.e., whether or not the claimed invention is defined using means or step plus function language. The correlation step will ensure that office personnel will correctly interpret each claim limitation. (emphasis added).

Thus, Applicants respectfully submits that the rejection under 35 U.S.C. § 101 of at least Claims 44-74 are improper as these claims clearly recite apparatus claim limitations.

Accordingly, Applicants respectfully request that the rejection of Claims 38-74 under 35 U.S.C. § 101 be withdrawn.

In response to the rejection of Claims 38-74 under 35 U.S.C. §103(a) as unpatentable over Cuatto in view of Coleman, Applicants respectfully submit that amended independent Claim 38 recites novel features clearly not taught or rendered obvious by the applied references.

Independent Claim 38 is directed to a method for designing an architecture and specifications of a hardware and software system, including, *inter alia*:

... defining services which are functions that can be performed, and for each service, at least one use case which is a context or situation that the system is in;

associating, in the electrical architecture designing device, each use case with a user request, and an initial state and a final state of the system;

defining operations, in the course of which, for each state, a set of elementary operations are defined which correspond to a response for the system when said system is in said each state;

specifying the system architecture by defining characteristics of electronic control units and networks;

mapping the elementary operations onto calculating units;

and executing at least one of:

identifying the flow of data on the networks as a function of the mapping; and

identifying specifications associated with interfaces of the calculating units as a function of the mapping.

Independent Claims 44 and 74 recite substantially similar features as in independent Claim 38. Thus, the arguments presented below with respect to independent Claim 38 are also applicable to independent Claims 44 and 74.

Cuatto describes a hardware / software co-design tool targeted at reactive, real-time, control dominated embedded systems, composed of software on a micro-controller and semi-custom hardware. Page 6 of the outstanding Office Action asserts that the first paragraph of section 2.1 of Cuatto describes “associating each use case with at least one departure state of the system, and, for each departure state, an arrival state of the system.” However, Cuatto fails to teach or suggest “associating, in the electrical architecture designing device, each use case with a user request, and an initial state and a final state of the system,” as recited in Applicants’ independent Claim 38.

Section 2.1 of Cuatto describes that a Codesign Finite State Machine (CFSM) “consists of a set of inputs, a set of outputs, and a transition function: each transition is

triggered by a set of input events and emits, after an unbounded non-zero reaction time, a set of output events.” Thus, Cuatto merely describes that based on a set of inputs, a transition function creates a set of outputs. Cuatto does not describe that a use case (which is a context or situation that the system is in) is associated with a user request, and an initial state and a final state of the system.

Cuatto also fails to teach or suggest “defining operations, in the course of which, for each state, a set of elementary operations are defined which correspond to a response for the system when said system is in said each state,” as recited in Applicants’ independent Claim 38. As described above, section 2.1 of Cuatto describes that each transition is triggered by a set of input events. However, Cuatto does not describe that for each state, *a set of elementary operations are defined* that correspond to a response for the system when the system is in each state.

Thus, Applicants respectfully submit that independent Claims 38, 44, and 74 (and all claims depending thereon) patentably distinguishes over Cuatto. Further, Applicants respectfully submit that Coleman fails to cure any of the above-noted deficiencies of Cuatto.

Accordingly, Applicants respectfully request that the rejection of Claims 38-74 under 35 U.S.C. §103(a) as unpatentable over Cuatto in view of Coleman be withdrawn.

In order to vary the scope of protection recited in the claims, new Claims 75 and 76 are added. New Claims 75 and 76 find non-limiting support in the disclosure as originally filed, for example at page 1, lines 1-3 and page 6, lines 18-24.

Therefore, the changes to the claims are not believed to raise a question of new matter.³

³ See MPEP 2163.06 stating that "information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter."

Consequently, in view of the present amendment, and in light of the above discussion, the pending claims as presented herewith are believed to be in condition for formal allowance, and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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